Remarks

Claims 1-43 are pending in the application. Claims 1-6, 8, 17-21, 29, 30, 32-39, and 41-43 are rejected. Claims 7, 9-16, 22-28, 31 and 40 are objected to. Claims 8, 17, 29, and 35 are amended herein. No new subject matter is added. All rejections and objections are respectfully traversed.

Claims 29-31 are rejected under 35 U.S.C. 112, second paragraph as indefinite. Claim 29 is amended to overcome the rejection. Claims 30 and 31 depend from amended claim 29.

Claim 8 is amended to provide proper antecedent basis for "frame." Claims 17 and 35 are amended to more distinctly claim the invention.

In the invention, a wireless mobile communications network includes a base station and a plurality of mobile nodes. A first mobile node is configured as a major node to communicate information directly with the base station via a network link.

A second mobile node is configured to communicate the information indirectly with the base station via a local link with the major node and the network link from the major node to the base station to form a locally linked mobile network within the wireless mobile communications network.

Claims 1, 8, 17, 18, 21, 32, 33, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brederveld, et al. (U.S. 5,898,679 – "Brederveld").

Brederveld describes a wireless local area network (LAN) having a server connected to an access point, and multiple mobile stations communicating with each other, and with the server through the access point. Brederveld's system determines if a destination node has received a message from a source node, and selectively repeats transmitting the message until the destination node acknowledges the message.

First, the Examiner's assertion that a mobile node that remains stationary can be a base station is absurd, and is an unworkable misrepresentation of known wireless communication architectures. Throughout the industry, *without exception* the base station is the access point, and the base station is well defined to those of ordinary skill in the art, and in the ordinary meaning of the word. A base station is the hub of a wireless network. Mobile stations cannot communicate with a server without the communication going through the base station. Base stations may also be referred to as "wireless routers," "wireless gateways," and "access points," as in Brederveld.

For the Examiner to suggest that a mobile terminal, such as a cell phone, become a base station cell tower when it stops would be considered unreasonable and confusing by those of ordinary skill in the art. Nowhere, in the literature and industry, is a stationary cell phone ever considered the same as the cell tower or base station.

The Examiner is requested to specifically point out where Brederveld describes mobile stations communicating directly with the server, without using the access point. A person of ordinary skill in the art would know that a wireless link between the mobile units and the base station (or access point) is known as a ***network link***.

This is because the link to the base station provides nodes in the LAN access to networks beyond the local network. A wireless link between mobile units in a LAN is called a ***local link***, because the communication do not pass through the base station, or outside the LAN.

At col. 5, lines 31-37, Brederveld describes communication between mobile stations using ***local links***:

> "As shown in FIG. 1, MS 120, MS 121 and MS 122 are near the outer limits of the broadcast range of AP 110. Additionally, MS 120 and MS 121 are out of range of one another. If MS 120, acting as a source end-station, transmits a message intended for MS 121, the destination end-station, the signal will not reach MS 121 unless a relay is present. In this case, MS 122 functions as a selective relay and repeats the message transmitted by the source end-station, MS 120, when the relay function of MS 122 determines that there is some indication that MS 121 has not received the message sent by MS 120."

Claimed is a first mobile node configured as a major node to communicate information directly with the base station via a network link. The section of Brederveld above describes mobile nodes communicating with each other across local links only between mobile nodes, and not via the base station.

Further, the invention includes a second mobile node configured to communicate the information indirectly with the base station via a local link with the major node and the network link from the major node to the base station. The claimed major and minor nodes result in a locally linked mobile network within the wireless mobile communications network. In short, the invention communicates indirectly with a base station by transmitting from a second mobile node (minor node) to a first mobile node (major node) using a local link, and then from the first mobile

(major node) node to a base station using a network link. Brederveld describes transmitting from mobile node to mobile node. That can never make the invention obvious.

In claim 17, a configuration of the nodes of the locally linked mobile network is adaptively adjusted by the basestation depending on need, traffic type, link quality, coverage, utilized bandwidth, and mobility. The claimed locally linked mobile network includes minor nodes that communicate indirectly with a base station using a local link with a major node, and the major node's network link with the base station. Brederveld describes communicating from mobile node to mobile node through another mobile node. Movement by MS 121 does not change the configuration of that mobile station, nor does movement change the configurations of other nodes. Brederveld can never make the invention obvious.

In claim 18, each mobile node monitors a quality of the network link with the base station. At col. 5, lines 38-40 of Brederveld, only a local link between mobile nodes is described. Determining whether relays are needed between mobile nodes has nothing to do with a network link. Local links between nodes can never make obvious nodes monitoring a network link with a base station as claimed.

In claim 21 the locally linked mobile network includes a plurality of major nodes configured to communicate information with each other and the minor node. As stated above, Brederveld never describes major nodes and minor nodes as claimed. Nor does Brederveld describe indirect communication with a base station from a minor node, through a major node to the base station using a local link and a

network link. Brederveld shows plurality of mobile nodes that are configured differently than the claimed major and minor nodes.

In claim 32 the wireless mobile communications network further includes an end of transmission signal to indicate an end of communicating the information, which is communicated indirectly form minor node to major node to base station. Brederveld never describes the claimed indirect communication.

In claims 42 and 43 the mobile nodes according to the invention can be cellular telephones or palm top computing devices, respectively. Applicants have thoroughly searched Brederveld and failed to find cellular telephones or palm top computing devices anywhere, or anything else configured as major or minor nodes according to the invention.

Claims 2, 3, 5, 6, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brederveld in view of Jou, et al. (U.S. 6,480,472). Claim 8 is also traversed below, because claim 8 is amended to depend from claim 2.

Jou describes a method for supervising a dedicated control channel used in a wireless communication system including mobile nodes and a base station. Jou's method maintains, in the mobile nodes, a count of good, bad and empty frames to determine whether a communications channel with a base station is lost, and whether to disable or enable the mobile node transmitter.

Jou fails to cure the defects of Brederveld. The mobile nodes in Jou communicate directly with the base station, never indirectly via a mobile node as claimed. Jou

never forms a locally linked mobile network within the wireless mobile communications network.

In claim 2, each mobile node further includes a header detector, coupled to a receiver and a decoder, configured to detect a header in a frame used to communicate the information; and a message processor, coupled to the header detector and a transmitter, configured to route the frame over the network link and the local link. In claim 8 each frame includes a header. Jou's processor detects and counts good, bad, and empty frames. Frames are counted by Jou, not routed over a network and local link as claimed. Neither Brederveld nor Jou describes routing frames over a network link ***and*** a local link for indirect communication with the base station by a minor node as claimed. Jou and Brederveld can never be used to make the invention obvious.

In claim 3 the header detector is connected to an output of the decoder and the locally linked mobile network operates asynchronously. Neither Brederveld nor Jou describes a locally linked mobile network as claimed.

In claim 5 the major node communicates the frame while in standby mode, and the minor node receives the frame in active mode. The Examiner asserts that mobile nodes both transmit and receive. The Examiner does address the issue of standby and active modes. However, the configuration of major and minor nodes according to the invention routes transmissions using both local and network links to achieve an indirect communication from minor node to base station, which neither of the references describes.

In claim 6 the mobile nodes are cellular telephones forming a locally linked mobile network within the wireless mobile communications network not described by the references.

Claims 4, 9, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brederveld in view of Jou and in further view of Miyake (U.S. 5,903,618).

Miyake describes a multimode radio communication system having a base station that periodically transmits a sync signal, and mobile nodes operating in synchronization with the sync signal transmitted from said base station. The mobile nodes can communicate either directly with the base station, or indirectly with other mobile nodes through the base station. Claimed is a minor node communicating with a base station indirectly through a major node. Miyake can not cure the defects of Brederveld and Jou.

In claims 4, 9, and 20, each mobile node further comprises a GPS receiver and the locally linked mobile network operates synchronously; the header includes a code word, and control information; and each mobile node uses channel quality and mobility characteristics to determine suitability for operating as the major node, respectively. Miyake describes GPS receivers on mobile nodes at col. 10, but fails to describe the locally linked mobile network, header including a code word, or operating as a major node for indirect communication as claimed.

Claims 35, 36, 38, 39, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brederveld in view of Jou.

In claim 35 a wireless mobile communications network includes a base station and a plurality of mobile nodes. Each mobile node includes a receiver coupled to an antenna; a header detector coupled to the receiver to detect a header in a received frame ***from the base station***; a decoder coupled to the header detector to decode the received frame, the detected frame to be transmitted to another mobile node; a message processor to reformat the frame; an encoder to encode the reformatted frame; and a transmitter to transmit the encoded frame ***to the other mobile node***.

Here, each mobile node is configured so that the base station sends a frame indirectly to another mobile node through the mobile node. As stated above with respect to claims 1 and 33, Brederveld describes source mobile node to destination mobile node communication using relay nodes, and Jou describes direct base station to mobile node communication. Neither of those modes of communication makes obvious indirect communication between a base station and other mobile nodes according to the invention.

In claim 36 the header detector is connected to an output of the decoder and the plurality of mobile nodes operate asynchronously. The header detector detects frames from a base station to be transmitted to another mobile node. None of the references describes this. In claim 38, the mobile node communicates the frame from the base station while in standby mode, and the other mobile node receives the frame in active mode. Brederveld describes source mobile node to destination mobile node communication using relay nodes, and Jou describes direct base station to mobile node communication.

In claim 39 the header from the base station detected by the header detector is a forward header that identifies the other mobile node. Here again, indirect communication form the base station to the other mobile node is never described in the references which only describe source mobile node to destination mobile node communication using relay nodes, and direct base station to mobile node communication.

In claim 41 the mobile node monitors a quality of the network with the base station. The Examiner points to Brederveld describing a mobile station determining if a relay is required in a local link between two mobile stations. The base station, i.e., access point, does not determine link quality and performs no monitoring with the mobile node as claimed.

All rejections have been complied with, and applicant respectfully submits that the application is now in condition for allowance. The applicant urges the Examiner to contact the applicant's attorney at phone and address indicated below if assistance is required to move the present application to allowance. Please charge any shortages in fees in connection with this filing to Deposit Account 50-0749.

Respectfully submitted,

By: _____

Mitsubishi Electric
Research Laboratory, Inc.
201 Broadway
Cambridge MA, 02139
(617) 621-7539

Andrew J. Curtin
Reg. No. 48,485
Attorney for Assignee